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Title of the investigation: NASA Contract FO Ø 13

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First progress report ( up to March 31 st, 1974)

(E74-10750) MULTISPECTRAL PHOTOGRAPHY OF  
ITALIAN VOLCANIC ACTIVITY, VEGETATION, AND  
PALEO RIVER BEDS Progress Report  
(Consiglio Nazionale delle Ricerche,  
Milan) 3 p HC \$4.00

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Unclassified  
CSCL 08F G3/13 00750

Test site area: Sicily.

Following the experience gathered by the ERTS imageries we are analizing the photographic material received (SL3 mission) in order to complete and implement our investigation on the Mt.Etna volcanic environment.

A particular attention is given to the vegetation canopy modification and its relationship to the soil type.

The Skylab missions have been carried out shortly before the occurence of the lateral eruption which started at the end of January '74 in the western slope of the cone. We intend to use the Skylab multispectral data also to discriminate the vegetation type and its seasonal modification around the area where the eruption occured.

This investigation seems feasible considering the superior geometrical resolution of Skylab imageries comparing with that of ERTS-A. Magmatic gases pressure would have had the strength to enter the flysch layers reaching the surface and the forestry soil and influencing the vegetation life.

The main geologic lineaments have been outlined using ERTS images. Some results have already been presented. ERTS data especially during november 1972 pass emphasized mainly N-S directed lineaments. Unknown lineaments have been discovered in central Sicily. The SL3 photographs don't show generally an agreement with ERTS data mainly because of the different season and sun illumination angle and direction.

On the other hand E-W directed lineaments have been shown, some of them being unknown.

Other areas:

a) rice fields in Northern Italy.

In the frame of the "Agreste" project (European Community preparatory phase of ERTS-B investigation) an inventory has

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been made on rice cultivations using false colour Skylab images as well as the multispectral camera photographies of September 3rd.

"False colour ratio" has been applied using this set up:

<u>I.R.</u>	in red colour
green	

<u>red</u>	in green colour
orange	

The main task of this type of enhancement is to extract the vegetation canopy from the back-ground.

Moreover the density slicing technique was employed to discriminate the different type of vegetation.

b) Paleo river beds in Northern Italy.

The multispectral camera photographies have been analyzed to classify the soils surficial structure and for discovering anomalous patterns into the cultivated areas.

By means of a TV analog processor we treated the informations supplied by green and near infrared bands: in particular the slicing of these bands has been performed to distinguish the materials by mapping their spectral behaviour; in fact it is to be expected that the surficial moisture is a major indicator of a paleo river bed.



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